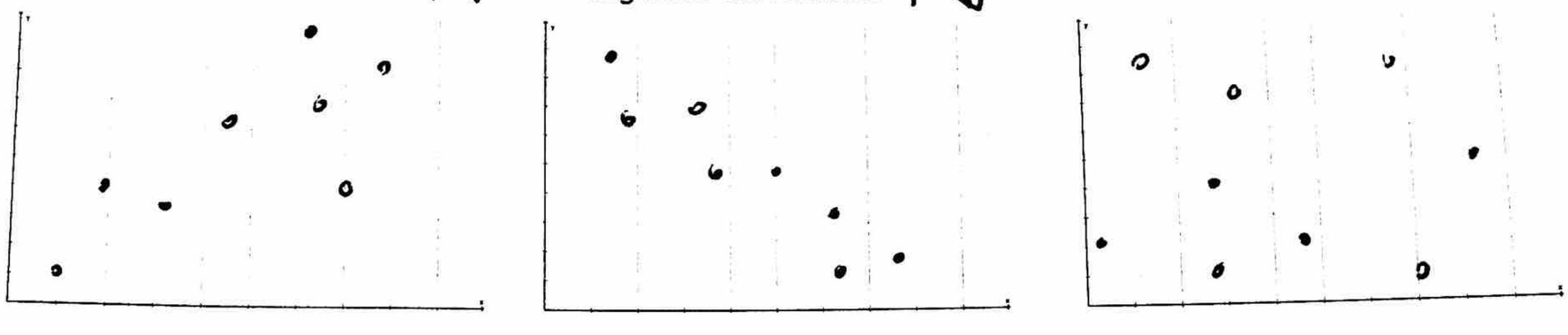
Algebra 1
Unit 5 Review

Name: Key

Round all answers to the nearest hundredth.

1. Sketch a scatterplot displaying a...
   a. Positive Correlation ↑↑
   b. Negative Correlation ↑↓
   c. No Correlation



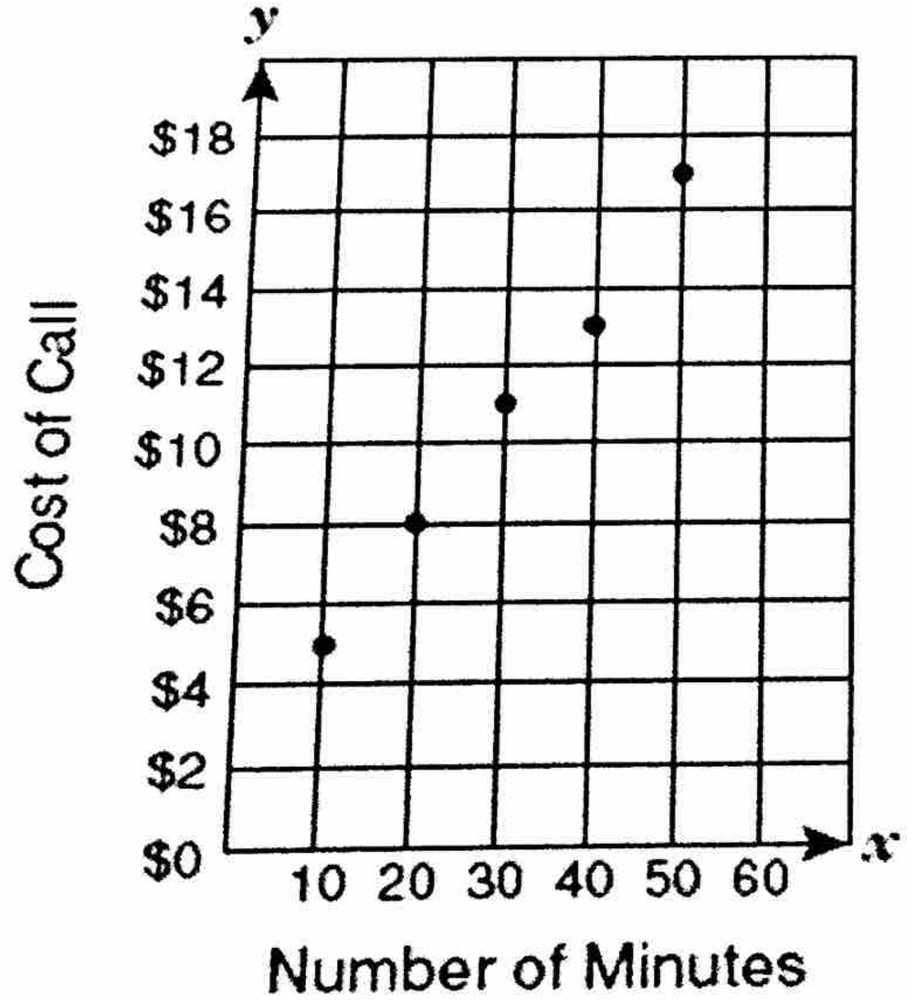
2. Determine if you would expect a positive correlation, a negative correlation, or no correlation between the two sets of data.
   a. A person's height and the number of letters in a person's name

      NO correlation → not related!

   b. The amount of time you study for a test and the score that you receive.

      POSitive → when you study more, the grade goes up ↑↑

3. The scatterplot below shows the cost of phone calls Jeff made to his brother overseas in relation to the number of minutes per phone call.



positive correlation
minutes ↑
cost ↑

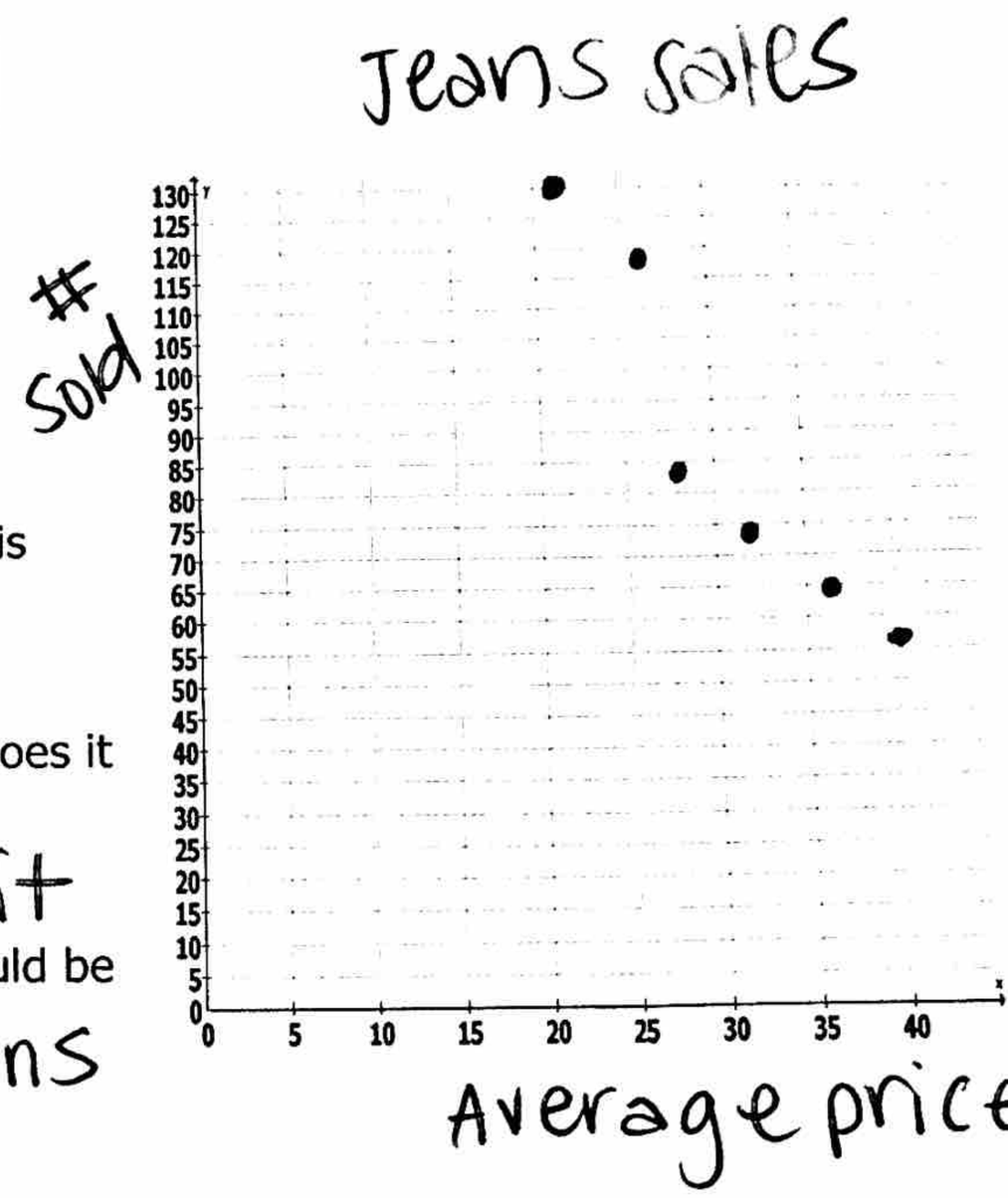
According to the data, what is the relationship between the number of minutes of a phone call and the cost of the call?

~~A.~~ As Jeff made more phone calls, the cost of the phone calls increased.
~~B.~~ As Jeff made fewer phone calls, the cost of the phone calls decreased.
~~C.~~ As Jeff decreased the number of minutes on the phone, the number of phone calls decreased.
(D.) As Jeff increased the number of minutes on the phone, the cost of the phone calls increased.

4. Use the table below about the sales of jeans.

Average Price	$21	$26	$28	$32	$36	$40
Number sold	130	118	82	74	65	58

A) Create a scatterplot of the data, label the axes.



B) Write the equation of the line of best fit that represents this data. LinReg! $y = -3.97x + 209$

C) What is the correlation coefficient for this data and what does it mean? -0.935

Negative correlation, strong fit

D) Use this line to predict about how many pairs of jeans would be sold if the price was $45.

$x = 45$ About 30 jeans

5. The table below lists corresponding x-and y-values of a linear function. What is the value of y when $x = 5$?

x	y
0	3
1	12
2	21
3	30

$y = 9x + 3$

$x = 5$

48

6. Which of the following usually represents a negative correlation?

pos i. Ice cream sales and outside temperature temp ↑ icecream ↑

ii. Someone's height and how much they weight no corr.

neg iii. Absences in a class and the overall grade in the class absences ↑ grade ↓

neg iv. Temperature outside and amount of clothes worn temp ↑ clothes ↓

A. i only

B. ii only

C. i and iii only

D. iii and iv only

E. iv only

7. Seven students were surveyed about their video game time and their GPA. The table shows the survey results.

Hours playing video games	0	15	3	5	13	6	17
GPA	4.0	2.5	4.0	3.9	2.75	3.0	1.5

Calculate, using your calculator, an equation that best fits this data. Which of the following accurately describes the correlation and causation for the data set? $y = -.13x + 4.22$

$r = -.93$

↑ close to 1 so, strong

no controlled exp. → no causation

A. Weak correlation; no causation
B. Weak correlation; likely causation
C. Strong correlation; no causation
D. Strong correlation; likely causation

8. The table shows the average and maximum lifespan for some animals.

Lifespan of Some Animals								
Avg.	12	25	15	8	35	40	41	20
Max.	47	50	40	20	70	77	61	54

a. Calculate the line of best fit equation for this data. $y = 1.22x + 22.45$

b. What is the expected average lifespan for an animal with a maximum lifespan of 45 years?

$y = 45$ ... x is about 19 years

9. Find the correlation coefficient for the following set of data.

Per capita cheese consumption	**Number of people who died by becoming tangled in their bedsheets**
327	29.8
456	30.1
509	30.5
497	30.6
596	31.3
573	31.7
661	32.6
741	33.1
809	32.7
717	32.8

$r = 0.95$

Determine whether each situation illustrates association or causation. Explain your reasoning, including other factors that might be involved.

10. A study showed that the length of a baby at birth was negatively correlated with the month in which the baby was born.

NO association, month born doesnot determine how long a baby is.

11. A controlled experiment was conducted and a negative correlation was found with the amount of free time you have and the number of hours you work.

Negative ASSOciation. WORK ↑ FREETIME ↓
we can say there is a causation since there was a controlled experiment conducted.

12. A store noticed that the sales of snow shovels and the amount of snowfall were positively correlated.

If there is more snow, then more shovels are sold
no causation → no controlled experiment.

13. During one month at a local deli, the number of pounds of ham sold decreased as the number of pounds of turkey sold increased.

Ham ↓ Turkey ↑
There is an association, but we cannot say ham sales decreasing causes turkey sales to increase (no controlled exp)